

NOAA/NESDIS in the Next Decade: The Space Weather Observations

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1. NOAA National Environmental Satellite, Data, and Information Service

NOAA has made long-term investments in observing and predicting space weather and has initiated formulation for a Space Weather Observations (SWO) program that will be implemented alongside the next generation of its geostationary-orbit (GEO) and low-earth-orbit (LEO) programs. The new effort exemplifies NOAA's commitment to the provision of critical imagery and measurements delivered to the National Weather Service and other partners. Key SWO capabilities include imagery in UV, X-ray, and visible wavelengths as well as in situ measurements. These capabilities provide continuity to the ongoing Space Weather Follow On (SWFO) Program whose platforms are scheduled for launch in 2025. Furthermore, the effort will evaluate and develop plans for solar imagery, magnetospheric particle and magnetic-field measurements from geostationary and off-equatorial orbits, and ionospheric/thermospheric imagery and in situ measurements. In addition to dedicated satellites for operational space weather observations, the effort will evaluate options for hosting selected instruments on NOAA's future GEO and LEO missions. SWO goals include building smaller systems and infusion of new emerging technologies through partnerships to fulfill the space weather objectives. SWO seeks to provide continuation for NOAA's Program of Record 2025, while developing a realistic mission architecture based on recent technological advancements and collaborative partnerships. The agency is building on earlier mission concepts by including several nascent large-scale priorities: provision of services to the burgeoning LEO satellite fleet; support to space exploration such as NASA's initiatives for the Moon and Mars; and the strategic growth of commercial space. In this complex and exciting program, the agency will continue its long-term partnerships with agencies such as NASA, branches of the DOD, NSF, and USGS, and a number of national and international agencies.